



City of Santa Barbara
Fire Prevention Bureau

Residential Sprinkler System Frequently Asked Questions and Facts

Where do I tell people to start? Will they find fire sprinklers in the yellow pages?

If a home builder is not familiar with contractors that install residential fire sprinklers, there are several options.

Look in the local Yellow Pages under "Sprinklers, Fire"

Ask a local or state fire marshal if contractors in your state are required to be licensed. If they are, contact the state licensing board for a current list of licensed contractors.

Contact fire sprinkler contractor associations for names of residential sprinkler contractors in your area.

An increasing number of contractors have Web pages describing their capabilities.

Any professional fire sprinkler contractor can install these systems, but for best results look for a contractor that specializes in residential fire sprinkler systems or one that has a residential sprinkler installation unit within the company.

How much should people expect to pay for a fire sprinkler system?

If installed during new home construction, home fire sprinklers often cost no more than 1 to 1 ½ percent of the total building cost, which is about what they would pay for an upgrade in carpeting. The investment in a family's fire protection may be slightly lower or higher, depending on the location and complexity of the home. In Santa Barbara the cost is approximately \$2.50 to \$3.00 per square foot depending on complexity of the installation.

A review of potential water upgrade costs is detailed below, and contractor rates vary. The City Fire Department plan review and inspection fee for a single family residence sprinkler system is \$171.00.

How long should installation take? Can other construction work continue while the sprinklers are going in?

Fire sprinkler installations are like electricity, plumbing or any other operational system in a home. The total time involved will depend on the size and complexity of the home.

Certain portions of the system (i.e. water piping) are more easily and cost-effectively installed in the earliest stages of construction, while the actual finish (i.e. installing the fire sprinkler devices, testing the system, etc.) will take place after the house is framed. Fire sprinkler systems are often completed prior to the other systems in a home, but other mechanical trades may work alongside the sprinkler contractor if necessary.

How are fire sprinkler systems maintained?

A residential fire sprinkler system is basically maintenance free. The only testing required on a regular basis is opening the drain/test valve to check the alarm operation. The rest of the system is designed to operate properly for 20 years or more without any maintenance.

Some basic precautions to safeguard the fire sprinkler system are: Avoid painting or otherwise covering the fire sprinkler devices, as that will affect their sensitivity to heat.

Do not hang decorations, plants or other objects from the sprinkler or piping.

Other things to consider:

- Test the system periodically by opening the test valve and listening for an alarm bell.
- Know the location of the system shutoff valve.
- Make sure the system control valve is always open.
- Have your system reevaluated for needed upgrades when:
 - Water supply changes--addition or change of backflow device or water meter, or reduction of public water supply.
 - Building changes (walls, partitions, additions).

What if a home will not be connected to a public water supply?

Homes can be protected by automatic fire sprinklers in even the most remote areas. Several manufacturers offer self-contained water tanks to supply residential fire sprinkler systems. These tanks are designed to fit in a garage or another storage area of the home, and they hold enough water to comply with the National Fire Protection Association Standard 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes.

Will homeowner's insurance premiums go up?

No. Generally insurance rates will go down because fire sprinklers will keep damage low. Shop around; the savings vary by insurance company.

Modern fire sprinklers provide unobtrusive protection.

Unlike commercial fire sprinklers, residential sprinklers are small, and can be recessed into ceilings or walls. Some models are completely concealed by plates that can be matched to room paint colors. Modern residential sprinkler heads have been designed to be virtually unnoticeable even in open beam and cathedral ceilings.

How do fire sprinklers work?

Automatic fire sprinklers are individually heat-activated and attached to a network of piping with water under pressure. When the heat of a fire raises the sprinkler temperature to its operating temperature (usually 135° F), a solder link will melt or a liquid-filled glass bulb will shatter to open that sprinkler, releasing water and sounding an alarm. By acting automatically at the origin of a fire, sprinklers prevent a fire from growing to a dangerous size.

Do sprinklers go off accidentally?

It is possible for a sprinkler to discharge accidentally, but this is an extremely rare occurrence in systems which are properly maintained. Records indicate that only 1 in 16,000,000 sprinklers per year will open accidentally.

Do fire sprinklers cause widespread water damage?

Fire department hoses typically discharge ten to a hundred times more water than that discharged by sprinklers. Since *only* the sprinkler closest to the fire is activated, the total amount of water is limited.

Fire damage is also limited; most fires are put out quickly, by only a few sprinklers, in areas with a fully functional sprinkler system.

Will the sprinkler system be affective during a wildland fire?

Residential fire sprinkler systems are a life safety device designed for interior compartment fires and not for exterior fires such as a wildland fire. Statistically, fires originating in the home are the most common cause of fire death. Although the Fire Department has documented one incident during the Tea Fire where the residential sprinkler system saved a home when the exterior deck ignited, that incident is the exception. The most effective life safety component in a wildland fire is evacuation. New construction requirements, defensible space and vegetation management in wildland areas are more effective defenses for structures against wildfire.

If we get another Tea Fire or Jesusita Fire, won't we have a lot of the sprinklers going off in the newly sprinklered homes thus causing a precipitous drop in water pressure and causing inadequate hydrant pressure during the next wildland fire?

No. The sprinkler heads in a residential sprinkler system are activated by heat from within the compartment they are protecting, not from the exterior. In the case of the Tea Fire the houses destroyed during that event also had their water systems and associated piping and appliances destroyed which in turn, allowed water to run freely until the water to the property was turned off. In essence, we will have the same water pressure issues in a Tea Fire scenario regardless if houses are equipped with sprinkler systems or not.

Is a 5/8 inch domestic water meter adequate to supply a residential fire sprinkler system?

The 5/8 inch water meter debate continues in fire protection circles, with engineering experts on both sides of the issue. For Single family residences, the City of Santa Barbara generally installs 5/8 inch water meters that are designed to operate at a flow rate of 20 Gallons Per Minute (GPM). NFPA 13D requires 18 GPM as a general rule to operate the most remote sprinkler head. The standard domestic water meter provides 20 GPM. There are engineered options within NFPA 13D that allows the Fire Department to accept approved and listed sprinkler heads that operate at a lower GPM but still provide the same level of protection. On rare occasions when the domestic supply cannot meet the system demand tanks and/or pumps can be added to increase flow and pressure. The City has allowed the installation of home fire sprinklers as a mitigation measure in lieu of other requirements for years. In the approximately 100+ residences throughout the City that currently have automatic fire sprinkler systems it as been the experience of the Santa Barbara City Fire Prevention Bureau that a 5/8 inch water meter has worked for the majority of the applications.

That being said, a 5/8 inch water meter may not be adequate for all installations. The reason is because every installation is calculated according to the particulars of the lot such as the grade, length of the supply pipe, home design, size, number of heads and friction loss due to pipe configuration. In the event that the 5/8 inch water supply does not provide adequate water, there are options available to upgrade the water supply. Potential costs associated with water meter upgrade are estimated below.

The City water rates quoted below are from the Public Works Water Resources Fee Schedule effective July 1, 2009.

1. A standard 5/8 inch water meter has an annual fee of \$143.40 and a one time connection fee of \$2041.00. Water usage is then charged by hundred cubic feet (hcf) used.

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2. To upgrade to a 1 inch meter, the annual fee is \$358.80, an increase of \$215.40 over the 5/8 inch meter. The one time connection fee of \$2506.00 is \$465.00 greater than the 5/8 inch supply.

3. City policy also allows for unmetered water for a private fireline, using a 2 inch supply. This would require the builder to trench and tap the City water main, which would involve costs that will vary according to difficulty. Currently, the City fee for tapping the water main is \$885.00. There are a limited number of contractors allowed to perform this work and estimates for a typical connection, trench and repair of the City Street range from \$4000.00 to \$8000.00. in addition to the underground installation, a backflow device is required at an approximate cost of \$300.00. Although unmetered, there is also an annual fee of \$55.92 for the private fire line.

Pipe / Meter Size of Service	5/8"	1"	2"(Fire)
Annual	\$143.40	\$358.80	\$55.92
Connection	\$2041.00	\$2506.00	\$885.00
Trench (one time fee)			\$8,000.00 (estimate)
Backflow (one Time Fee)			\$300.00 (estimate)
First Year Totals*	\$2184.40	\$2864.80	\$9240.92
Subsequent years*	\$143.40	\$358.80	\$55.92

* Does not include the single family residence hcf usage rate of \$2.84 for the first 4 hundred cubic feet, \$4.76 for the next 16 hcf and \$5.01 for hcf over 20.

FACTS

Fires kill more people in the United States every year than all natural disasters combined.

80% of all fire deaths occur in the home. The single most effective way to prevent fire-related deaths is the installation of residential fire sprinklers. Combined with smoke alarms, they cut the risk of dying in a home fire by 82% compared to having neither.

Fire sprinklers can save money for developers, builders, home owners, and communities.

Through the use of trade-ups, developers and builders can achieve reduced construction costs while providing higher value homes for their customers. In the event of a home fire, homeowners can expect financial losses 90% lower than those that occur from fires in unsprinklered homes. Communities can deploy emergency services resources more effectively by reducing the burden caused by home fires.

Installing both smoke alarms and a fire sprinkler system reduces the risk of death in a home fire by 82%, relative to having neither.

Facts & Figures

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- Sprinklers typically reduce chances of dying in a fire and the average property loss by one-half to two-thirds compared to where sprinklers are not present.
- In 2002, 79% of fires occurred in the home, resulting in 2,670 fire deaths.

Only the sprinkler closest to the fire will activate, spraying water directly on the fire. Each sprinkler is individually activated by heat. Despite "sight gags" on TV sit-coms, smoke does not trigger sprinkler operation. The rest of the sprinklers in a house will not activate unless there is also a fire in that location. 90% of all home fires are contained with a single sprinkler.

Fire hoses, on average, use more than 8 1/2 times the water that sprinklers do to contain a fire.

According to the Scottsdale Report, a 15-year study of fire sprinkler effectiveness, a fire sprinkler uses, on average, 341 gallons of water to control a fire. Firefighters, on average, use 2,935. Reduced water damage is a major source of savings for homeowners.

The likelihood that a sprinkler will accidentally discharge because of a manufacturing defect is extremely rare.

Sprinkler mishaps are generally less likely and less severe than accidents involving home plumbing systems.